Appendix D
Initial CHART Assessment for the
Upper Columbia River Spring-run Chinook Salmon ESU

CHART Participants

The CHART for this ESU consisted of the following NOAA Fisheries biologists: Dale Bambrick (CHART Leader), Dennis Carlson, and Lynn Hatcher. CHART members also included Ken McDonald from the U.S. Forest Service and Jim Craig from the U.S. Fish and Wildlife Service. This CHART assessment also benefitted from review and comments by the Colville Indian Tribe and the Washington Department of Fish and Wildlife.

ESU Description

The Upper Columbia River spring-run chinook ESU includes all naturally spawned populations of chinook salmon in all river reaches accessible to chinook salmon in Columbia River tributaries upstream of the Rock Island Dam and downstream of Chief Joseph Dam in Washington, excluding the Okanogan River (64 FR 14208; March 24, 1999). Spring-run chinook salmon in this ESU have a stream-type life history, which means that juveniles enter marine waters during their second year and return to fresh water as pre-adults, maturing during their upriver spawning run. Three independent populations of spring-run chinook salmon are identified for the ESU: those that spawn in the Wenatchee, Entiat, and Methow River Basins. Adults returning to the Wenatchee River enter fresh water from late March through early May, those returning to the Entiat and Methow Rivers enter fresh water from late March through June. Their arrival times tend to be earlier in low flow years and later in high flow years. On their way upriver, the fish hold in deeper pools or under cover until the onset of spawning. They may spawn in the areas where they hold, or move further up into smaller tributaries. Peak spawning for all three populations occurs from August to September, though the timing is highly dependent upon water temperature. The egg incubation/alevin stage goes from August into December and emergence extends from that point into March. The juveniles typically spend one year in freshwater before migrating downstream—primarily in May and June. Most adults return after spending two years in the ocean, although 20 to 40 percent return after three years at sea.

CHART Area Assessments and Initial Conservation Value Ratings

The CHART assessment for this ESU addressed four subbasins containing 15 occupied watersheds, as well as the Columbia River rearing/migration corridor. Subbasins were

chosen as freshwater critical habitat units because they present a convenient and systematic way to organize the CHART's watershed assessments for this ESU. Recovery planning will likely emphasize the need for a geographical distribution of viable populations across the range of population groupings (also called "strata") in an ESU (Ruckelshaus et al. 2002, McElhany et al. 2003). The Interior Columbia Basin Technical Recovery Team (ICBTRT 2003) did not identify separate major groupings/strata for this ESU due to the relatively small size of the area. Therefore, as part of its assessment the CHART considered the conservation value of each HUC5 in the context of a single population group.

Unit 1. Chief Joseph Subbasin (HUC4# 17020005)

The Chief Joseph subbasin is located in north-central Washington and contained in Chelan, Douglas and Okanogon counties, Washington. The subbasin contains five watersheds, three of which are occupied by the ESU. These watersheds encompass approximately 817 mi^2 and 1,476 miles of streams. Fish distribution and habitat use data from WDFW identify approximately 42 miles of occupied riverine habitat in the watershed (WDFW 2003). However, the CHART questioned whether occupied reaches (approximately five miles) in two HUC5 watersheds (Jordan/Tumwater and Foster Creek) contained PCEs for this ESU. The CHART concluded that this was unlikely because these reaches are located upstream of the uppermost population in the ESU (Methow River) and in areas that were likely to be of minimal conservation value to the ESU. REPLACE preceding with "However, the CHART determined that occupied reaches in two watersheds (Jordan/Tumwater and Foster Creek) did not contain PCEs for this ESU because these reaches are located upstream of the uppermost population in the ESU (Methow River) and in areas that were likely to be of very minimal conservation value to the ESU." The Interior Columbia Basin TRT (2003) identified one demographically independent population (Methow River) occupying this subbasin. Table D1 summarizes the total number of occupied reaches identified for each HUC5 watershed containing spawning, rearing, or migration PCEs, as well as management activities that may affect the PCEs in the watersheds. Map D1 depicts the specific areas in this subbasin occupied by the ESU and under consideration for critical habitat designation.

After reviewing the best available scientific data for all of the areas within the freshwater and estuarine range of this ESU, the CHART concluded that one of the occupied watersheds (Upper Columbia/Swamp) warranted a medium overall rating but contained a high value migration corridor for the Methow River population connecting upstream watersheds with downstream reaches and the ocean. The other two occupied watersheds were not believed to contain PCEs for this ESU. Table D2 summarizes the CHART's

PCE/watershed scores and initial conservation value ratings, and Figure D1 shows the overall distribution of ratings by HUC5 watershed.

Unit 2. Methow Subbasin (HUC4# 17020008)

The Methow subbasin is located in north-central Washington adjacent to the U.S.-Canada border and contained entirely in Okanogon County, Washington. The subbasin contains seven watersheds, all of which are occupied by the ESU. This watershed encompasses approximately 1,823 mi^2 and 6,726 miles of streams. Fish distribution and habitat use data from WDFW identify approximately 202 miles of occupied riverine habitat in the watershed (WDFW 2003). The Interior Columbia Basin TRT (2003) identified one demographically independent population (Methow River) occupying this subbasin. Table D1 summarizes the total number of occupied reaches identified for each HUC5 watershed containing spawning, rearing, or migration PCEs, as well as management activities that may affect the PCEs in the watersheds. Map D2 depicts the specific areas in this subbasin occupied by the ESU and under consideration for critical habitat designation.

After reviewing the best available scientific data for all of the areas within the freshwater and estuarine range of this ESU, the CHART concluded that the occupied HUC5 watersheds in this subbasin were of either high or medium conservation value to the ESU. Of the seven HUC5s reviewed, five were rated as having high and two were rated as having medium conservation value. The CHART also concluded that the HUC5s with medium overall ratings (Middle Methow River and Lower Methow River) contain a high value rearing and migration corridor connecting high value upstream watersheds with downstream reaches and the ocean. Table D2 summarizes the CHART's PCE/watershed scores and initial conservation value ratings, and Figure D1 shows the overall distribution of ratings by HUC5 watershed.

Unit 3. Upper Columbia/Entiat Subbasin (HUC4# 17020010)

The Upper Columbia/Entiat subbasin drains the eastern Cascade Range in central Washington. Occupied watersheds in this subbasin are contained in Chelan, Douglas, Grant and Kittitas counties in Washington. The subbasin contains four watersheds, all of which are occupied by the ESU (but two of these consist of a rearing/migration corridor downstream of Rock Island Dam - see Unit 5 below). The two watersheds in this subbasin with tributary habitat (i.e., tributaries to the Columbia River mainstem) encompass approximately 907 mi^2 and 3,124 miles of streams. Fish distribution and habitat use data from WDFW identify approximately 103 miles of occupied riverine habitat in the subbasin (WDFW 2003). The Interior Columbia Basin TRT (2003) identified three demographically independent populations (Methow River, Entiat River,

and Wenatchee River) occupying this subbasin. Table D1 summarizes the total number of occupied reaches identified for each HUC5 watershed containing spawning, rearing, or migration PCEs, as well as management activities that may affect the PCEs in the watersheds. Map D3 depicts the specific areas in this subbasin occupied by the ESU and under consideration for critical habitat designation.

After reviewing the best available scientific data for all of the areas within the freshwater and estuarine range of this ESU, the CHART concluded that the occupied HUC5 watersheds in this subbasin were of high (Entiat River as well as the rearing/migration corridor downstream of Rock Island Dam) and medium (Lake Entiat) conservation value to the ESU. The CHART also concluded that while the tributary habitats in the Lake Entiat HUC5 were of medium conservation value, the HUC5 still contains a high value rearing and migration corridor connecting high value upstream watersheds with downstream reaches and the ocean (see Unit 5 below). Table D2 summarizes the CHART's PCE/watershed scores and initial conservation value ratings, and Figure D1 shows the overall distribution of ratings by HUC5 watershed.

Unit 4. Wenatchee Subbasin (HUC4# 17020011)

The Wenatchee subbasin drains the eastern Cascade Range in central Washington and is contained in Chelan County, Washington. The subbasin contains five watersheds, all of which are occupied by the ESU. The subbasin encompasses approximately 1,328 mi^2 and 3,979 miles of streams. Fish distribution and habitat use data from WDFW identify approximately 182 miles of occupied riverine habitat in the subbasin (WDFW 2003). The Interior Columbia Basin TRT (2003) identified one demographically independent population (Wenatchee River) occupying this subbasin. Table D1 summarizes the total number of occupied reaches identified for each HUC5 watershed containing spawning, rearing, or migration PCEs, as well as management activities that may affect the PCEs in the watersheds. Map D4 depicts the specific areas in this subbasin occupied by the ESU and under consideration for critical habitat designation.

After reviewing the best available scientific data for all of the areas within the freshwater and estuarine range of this ESU, the CHART concluded that the occupied HUC5 watersheds in this subbasin were of high and medium conservation value to the ESU. Of the five HUC5s reviewed, three were rated as having high and two were rated as having medium conservation value. Table D2 summarizes the CHART's PCE/watershed scores and initial conservation value ratings, and Figure D1 shows the overall distribution of ratings by HUC5 watershed.

Unit 5. Columbia River Corridor

For the purposes of describing units of critical habitat designation for this ESU, NOAA Fisheries defines the Columbia River corridor as that segment from Rock Island Dam downstream to the Pacific Ocean. Rock Island Dam is located near the downstream border of the Entiat River, HUC5 which was the furthest downstream HUC5 with spawning or tributary PCEs identified in the range of this ESU. Fish distribution and habitat use data from WDFW identify approximately 448 miles of occupied riverine and estuarine habitat in this corridor (WDFW 2003). This corridor overlaps with the following counties: Clatsop, Columbia, Gilliam, Hood River, Morrow, Multnomah, Sherman, Umatilla, and Wasco counties in Oregon, and Benton, Chelan, Clark, Cowlitz, Douglas, Franklin, Grant, Kittitas, Klickitat, Skamania, Wahkiakum, Walla Walla, and Yakima counties in Washington.

After reviewing the best available scientific data for all of the areas within the freshwater and estuarine range of this ESU, the CHART concluded that the Columbia River corridor was of high conservation value to the ESU. The CHART noted that this corridor connects every watershed and population in this ESU with the ocean and is used by rearing/migrating juveniles and migrating adults. The Columbia River estuary is a particularly important area for this ESU as both juveniles and adults make the critical physiological transition between life in freshwater and marine habitats (Marriott et al. 2002).

Marine Areas

NOAA Fisheries' analysis focused on freshwater and estuarine habitats upstream of the mouth of the Columbia River. While marine areas are occupied by this ESU, within this vast area the agency has not identified "specific areas within the geographical area occupied by the species . . . on which are found those physical or biological features . . . essential to the conservation of the species."

References and Sources of Information

References cited above as well as key reports and data sets reviewed by the CHART include the following:

Andonaegui, C. 1999. Salmon and Steelhead Habitat Limiting Factors Report for the Entiat Watershed, WRIA 46. Washington State Department of Ecology.

Andonaegui, C. 2000. Salmon, Steelhead, and Bull Trout Habitat Limiting Factors, WRIA 48 (Methow). Washington State Department of Ecology.

Andonaegui, C. 2001. Salmon, Steelhead, and Bull Trout Habitat Limiting Factors, WRIA 40 & 45, (Wenatchee). Washington State Department of Ecology.

Andonaegui, C., and 13 coauthors. 2003. A Biological Strategy to Protect and Restore Salmonid Habitat in the Upper Columbia Region. A Report to the Upper Columbia Salmon Recovery Board from the Upper Columbia Regional Technical Team.

Bartu, K. 2001. Salmon and Steelhead Habitat Limiting Factors Report for the Foster and Moses Coulee Watersheds, WRIA 44 & 50. Washington State Department of Ecology.

Berg, L and Lowman, D. 2002. Draft Wenatchee Subbasin Summary. Report Prepared for the Northwest Power Planning Council, dated May 17, 2002. (Available at http://www.cbfwa.org/)

Berg, L and Matthews, S. 2002. Draft Entiat Subbasin Summary. Report Prepared for the Northwest Power Planning Council, dated May 17, 2002. (Available at http://www.cbfwa.org/)

Forest Ecosystem Management Assessment Team (FEMAT). 1993. Forest ecosystem management: an ecological, economic, and social assessment. Report of the Forest Ecosystem Management Assessment Team. U.S. Government Printing Office 1993-793-071.

Foster, J. 2002. Draft Methow Subbasin Summary. Report Prepared for the Northwest Power Planning Council, dated May 17, 2002. (Available at http://www.cbfwa.org/)

Fulton, L. 1968. Spawning areas and abundance of chinook salmon (*Oncorhynchus tshawytscha*) in the Columbia River basin – past and present. Bureau of Commercial Fisheries Special Scientific Report – Fisheries No. 571, December 1970.

Fulton, L. 1970. Spawning areas and abundance of steelhead trout and coho, sockeye, and chum salmon in the Columbia River basin – past and present. National Marine Fisheries Service Special Scientific Report – Fisheries No. 618, December 1970.

Interior Columbia Basin Technical Recovery Team (ICBTRT). 2003. Independent Populations of Chinook, Steelhead, and Sockeye for Listed Evolutionarily Significant Units Within the Interior Columbia River Domain. Working draft of the OCBTRT dated July 2003.

Kaputa, M. 2002. Draft Lake Chelan Subbasin Summary. Report Prepared for the Northwest Power Planning Council, dated May 17, 2002. (Available at http://www.cbfwa.org/)

Marriott, D., and 27 contributors. 2002. Lower Columbia River and Columbia River Estuary Subbasin Summary. Report Prepared for the Northwest Power Planning Council, dated May 17, 2002. (Available at: http://www.cbfwa.org/)

McElhany, P., T. Backman, C. Busack, S. Heppell, S. Kolmes, A. Maule, J. Myers, D. Rawding, D. Shively, and C. Steward. 2002. Willamette/Lower Columbia Pacific salmonid viability criteria. Draft report from the Willamette/Lower Columbia Technical Recovery Team. December 2002.

Myers, J., R. Kope, B. Bryant, D. Teel, L. Lierheimer, T. Wainwright, W. Grant, F. Waknitz, K. Neely, S. Lindley, and R. Waples. 1998. Status review of chinook salmon from Washington, Idaho, Oregon, and California. U.S. Dep. Commer., NOAA Tech. Memo NMFS-NWFSC-35, 443 p.

NOAA Fisheries. 2002. Memorandum from B. Lohn (NOAA) to F. Cassidy Jr. (Northwest Power Planning Council) re: Interim Abundance and Productivity Targets for Interior Columbia Basin Salmon and Steelhead Listed Under the Endangered Species Act (ESA), dated April 4, 2002. (Available from NOAA Fisheries, Portland, Oregon)

NOAA Fisheries. 2003. Preliminary conclusions regarding the updated status of listed ESUs of West Coast salmon and steelhead. Report of the West Coast Salmon Biological Review Team dated February 19, 2003.

Northwest Power Planning Council. 1990. Presence/absence database from Northwest Power Planning Council's subbasin planning process. (Available at www.streamnet.org)

Peven, C. 2002. Draft Columbia Upper Middle Subbasin Summary. Report Prepared for the Northwest Power Planning Council, dated May 17, 2002. (Available at http://www.cbfwa.org/)

Quigley, T., R. Gravenmier, and R. Graham. 2001. The Interior Columbia Basin Ecosystem Management Project: project data. Station Misc. Portland, OR: USDA, Forest Service, Pacific NW Research Station.

Ruckelshaus, M., K. Currens, R. Fuerstenberg, W. Graeber, K. Rawson, N. Sands, J. Scott, J. Doyle. 2001. Independent Populations of Chinook Salmon in Puget Sound. April 2001 Memo from Puget Sound Technical Recovery Team.

Ward, D. 2001. Draft Mainstem Columbia River Subbasin Summary. Report Prepared for the Northwest Power Planning Council, dated August 3, 2001. (Available at http://www.cbfwa.org/)

Washington Department of Fish and Wildlife (WDFW) and Western Washington Treaty Indian Tribes (WWTIT). 1993. 1993 Washington State salmon and steelhead stock inventory (SASSI). WDFW, Olympia, WA, 212p.

Washington Department of Fish and Wildlife (WDFW). 2003. "Fishdist: 1:24,000 (24K) and 1:100,000 (100K) Statewide Salmonid Fish Distribution". GIS data layer. (M. Hudson, data manager). Available from Washington Department of Fish and Wildlife, 600 Capitol Way N, Olympia WA 98501-1091.

Washington State Conservation Commission and Northwest Indian Fisheries Commission. 2003. WRIA 49 Salmonid Distribution Table and maps, dated March 2003.

Table D1. Summary of Occupied Areas, PCEs, and Management Activities Affecting PCEs for the Upper Columbia River Spring-Run Chinook Salmon ESU

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Spawning / Rearing PCEs (mi)	Rearing/ Migration PCEs (mi)	Presence/ Migration Only PCEs (mi)*	Management Activities**
D1	Chief Joseph	Foster Creek	1702000503	0.0	0.0	0.9[?]	A, Fi
D1	Chief Joseph	Jordan/Tumwater	1702000504	0.0	4.2[?]	0.0	A, D, F, Fi, G, R
D1	Chief Joseph	Upper Columbia/Swamp Creek	1702000505	5.6	0.0	31.3	A, D, F, Fi, G, R
D2	Methow	Lost River	1702000801	4.1	0.4	3.3	F, Fi
D2	Methow	Upper Methow River	1702000802	16.9	0.0	4.5	F, Fi, G, I
D2	Methow	Upper Chewuch River	1702000803	19.4	0.5	0.0	F, Fi, R
D2	Methow	Lower Chewuch River	1702000804	25.0	3.9	0.0	A, F, Fi, G, R, I
D2	Methow	Twisp River	1702000805	30.2	3.1	0.0	F, Fi, G, R, I
D2	Methow	Middle Methow River	1702000806	27.8	24.3	0.0	A, F, Fi, G, M, R, I
D2	Methow	Lower Methow River	1702000807	5.2	29.4	4.0	F, Fi, G, M, R
D3	Upper Columbia/Entiat	Entiat River	1702001001	17.4	18.4	10.8	F, Fi, G, R, I
D3	Upper Columbia/Entiat	Lake Entiat	1702001002	0.0	1.1	53.7	A, D, F, Fi, G, M, R, U
D4	Wenatchee	White River	1702001101	24.0	2.7	7.8	F, Fi
D4	Wenatchee	Chiwawa River	1702001102	37.9	11.4	1.7	F, Fi, R
D4	Wenatchee	Nason/Tumwater	1702001103	35.1	14.9	0.0	F, Fi, R
D4	Wenatchee	Icicle/Chumstick	1702001104	2.9	9.0	0.0	A, F, Fi, G, M, R, U
D4	Wenatchee	Lower Wenatchee River	1702001105	4.2	28.8	1.2	A, F, Fi, G, I, M, R, U
	Multiple	Columbia River corridor	NA	0.0	473	0.0	C, D, I, R, T, U, W

* Some streams classified as "Presence/Migration Only PCEs" may also include rearing or spawning PCEs, but the GIS data are still undergoing review to confirm species use type.

** This list is not exhaustive. It is intended to highlight key management activities affecting PCEs in each watershed. Activities identified are based on the general categories described by Spence et al. (1996) and summarized previously in the "Special Management Considerations or Protection" section of this report. Coding is as follows: F= forestry, Fi = fire activity and disturbance, G = grazing, A = agriculture, C = channel modifications/diking, R = road building/maintenance, U = urbanization, S = sand and gravel mining, M = mineral mining, D = dams, I = irrigation

impoundments and withdrawals, T = river, estuary, and ocean traffic, W = wetland loss/removal, B = beaver removal, X = exotic/invasive species introductions, H = forage fish/species harvest. Primary sources for this information were the CHART and reports by Andonaegui (1999, 2000, 2001, and 2003), Quigley et al. (2001), and land use/land cover GIS layers from the U.S. Geological Survey.

Table D2. Summary of Initial CHART Scores and Ratings of Conservation Value for Habitat Areas in HUC5 Watersheds Occupied by the Upper Columbia River Spring-Run Chinook Salmon ESU

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18)[8]	Comments/Other Considerations	Initial CHART Rating of Conservation Value
D1	Chief Joseph	Foster Creek	1702000503	5	Moderate HUC5 score; CHART questioned PCE presence here since these habitats are upstream of Methow River and habitat is likely to be of minimal conservation value	No PCEs
D1	Chief Joseph	Jordan/Tumwater	1702000504	5	Moderate HUC5 score; CHART questioned PCE presence here since these habitats are upstream of Methow River and habitat is likely to be of minimal conservation value	No PCEs
D1	Chief Joseph	Upper Columbia/Swamp Creek	1702000505	8	Moderate HUC5 score; CHART concluded that there were very few low conservation value HUC5s since ESU as a whole has only 3 demographically independent populations and limited spawning/rearing PCEs; PCEs support one TRT demographically independent population; the medium HUC5 rating pertains to reaches upstream of the Methow/Columbia confluence – reaches downstream of this confluence are a high value rearing/migration corridor	Medium

[8] PCE/watershed scores were derived using the CHART scoring process described in the introduction to this report.

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18)[8]	Comments/Other Considerations	Initial CHART Rating of Conservation Value
D2	Methow	Lost River	1702000801	13	Moderate-high HUC5 score; CHART concluded that there were very few low conservation value HUC5s since ESU as a whole has only 3 demographically independent populations and limited spawning/rearing PCEs; PCEs in this HUC5 support one population and overlap with FEMAT key watershed for at-risk anadromous salmonids; CHART determined that spawning/rearing PCEs in this and other uppermost watersheds were of high conservation value to the ESU	High
D2	Methow	Upper Methow River	1702000802	12	Moderate-high HUC5 score; CHART concluded that there were very few low conservation value HUC5s since ESU as a whole has only 3 demographically independent populations and limited spawning/rearing PCEs; PCEs in this HUC5 support one population and overlap with FEMAT key watershed for at-risk anadromous salmonids; CHART determined that spawning/rearing PCEs in this and other uppermost watersheds were of high conservation value to the ESU; this HUC5 also contains a high value connectivity corridor for upstream HUC5	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18)[8]	Comments/Other Considerations	Initial CHART Rating of Conservation Value
D2	Methow	Upper Chewuch River	1702000803	13	Moderate-high HUC5 score; CHART concluded that there were very few low conservation value HUC5s since ESU as a whole has only 3 demographically independent populations and limited spawning/rearing PCEs; PCEs in this HUC5 support one population and overlap with FEMAT key watershed for at-risk anadromous salmonids; CHART determined that spawning/rearing PCEs in this and other uppermost watersheds were of high conservation value to the ESU	High
D2	Methow	Lower Chewuch River	1702000804	12	Moderate-high HUC5 score; CHART concluded that there were very few low conservation value HUC5s since ESU as a whole has only 3 demographically independent populations and limited spawning/rearing PCEs; PCEs in this HUC5 support one population and overlap with FEMAT key watershed for at-risk anadromous salmonids; CHART determined that spawning/rearing PCEs in this and other uppermost watersheds were of high conservation value to the ESU; this HUC5 also contains a high value connectivity corridor for upstream HUC5	High

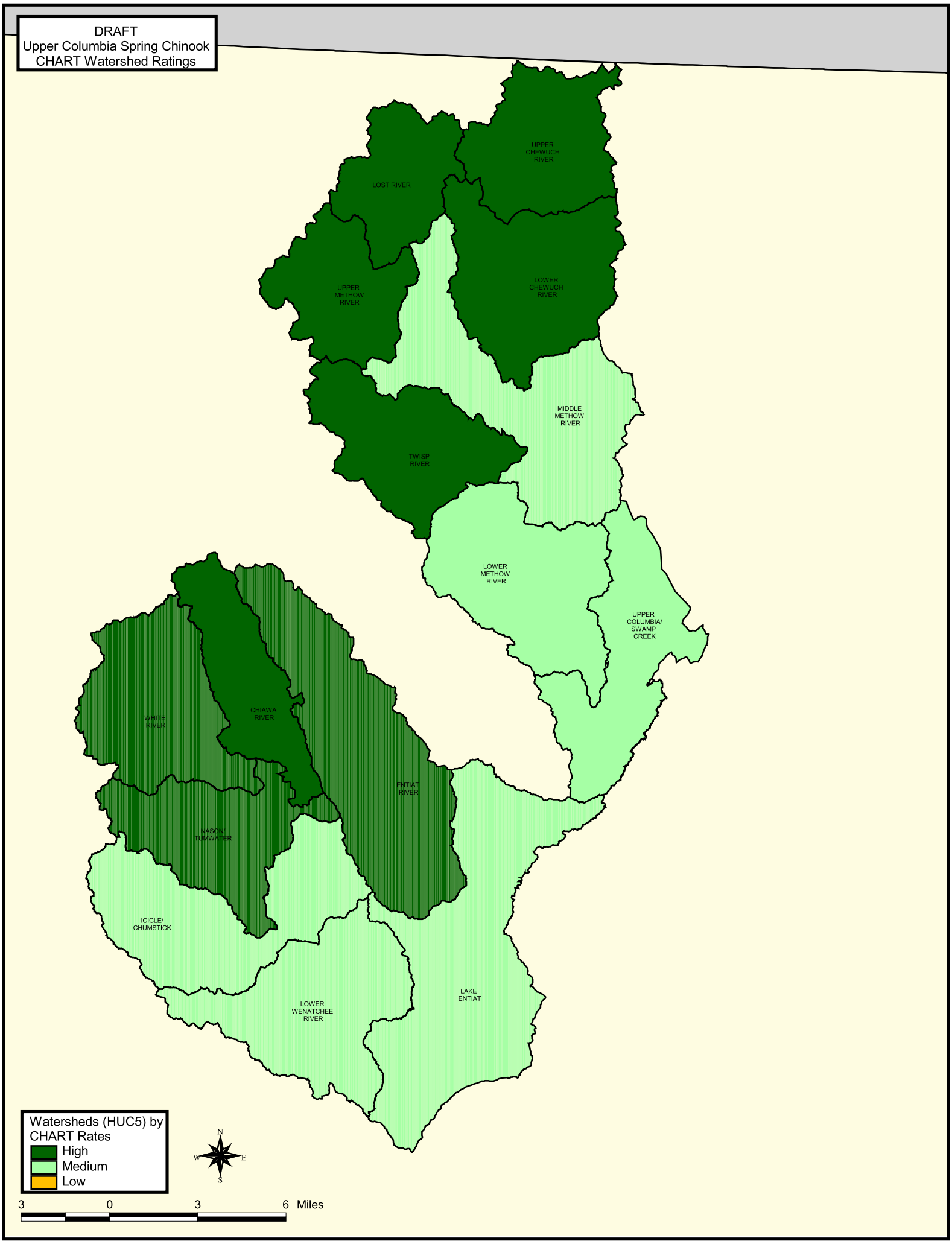
Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18)[8]	Comments/Other Considerations	Initial CHART Rating of Conservation Value
D2	Methow	Twisp River	1702000805	15	Moderate-high HUC5 score; CHART concluded that there were very few low conservation value HUC5s since ESU as a whole has only 3 demographically independent populations and limited spawning/rearing PCEs; PCEs in this HUC5 support one population and overlap with FEMAT key watershed for at-risk anadromous salmonids; CHART determined that spawning/rearing PCEs in this and other uppermost watersheds were of high conservation value to the ESU	High
D2	Methow	Middle Methow River	1702000806	11	Moderate-high HUC5 score; CHART concluded that there were very few low conservation value HUC5s since ESU as a whole has only 3 demographically independent populations and limited spawning/rearing PCEs; PCEs support one TRT demographically independent population and some reaches contain PCEs overlapping with FEMAT key watersheds for at-risk anadromous salmonids; this HUC5 also contains a high value connectivity corridor for upstream HUC5s	Medium

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18)[8]	Comments/Other Considerations	Initial CHART Rating of Conservation Value
D2	Methow	Lower Methow River	1702000807	11	Moderate-high HUC5 score; CHART concluded that there were very few low conservation value HUC5s since ESU as a whole has only 3 demographically independent populations and limited spawning/rearing PCEs; PCEs support one TRT demographically independent population; this HUC5 has fewer spawning areas but contains a high value connectivity corridor for upstream HUC5s	Medium
D3	Upper Columbia/Entiat	Entiat River	1702001001	13	Moderate-high HUC5 score; CHART concluded that there were very few low conservation value HUC5s since ESU as a whole has only 3 demographically independent populations and limited spawning/rearing PCEs; PCEs support entire spawning range of one TRT demographically independent population	High
D3	Upper Columbia/Entiat	Lake Entiat	1702001002	10	Moderate HUC5 score; CHART concluded that there were very few low conservation value HUC5s since ESU as a whole has only 3 demographically independent populations and limited spawning/rearing PCEs; PCEs support all 3 TRT demographically independent populations; the medium rating pertains to the tributary reaches in this HUC5; the Columbia River mainstem reaches in this HUC5 downstream to Rock Island Dam are a high value rearing/migration corridor	Medium

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18)[8]	Comments/Other Considerations	Initial CHART Rating of Conservation Value
D4	Wenatchee	White River	1702001101	14	High HUC5 score; CHART concluded that there were very few low conservation value HUC5s since ESU as a whole has only 3 demographically independent populations and limited spawning/rearing PCEs; PCEs in this HUC5 support one population and overlap with FEMAT key watershed for at-risk anadromous salmonids; CHART determined that spawning/rearing PCEs in this and other uppermost watersheds were of high conservation value to the ESU	High
D4	Wenatchee	Chiwawa River	1702001102	15	Highest HUC5 score for entire ESU; CHART concluded that there were very few low conservation value HUC5s since ESU as a whole has only 3 demographically independent populations and limited spawning/rearing PCEs; PCEs in this HUC5 support one population and overlap with FEMAT key watershed for at-risk anadromous salmonids; CHART determined that spawning/rearing PCEs in this and other uppermost watersheds were of high conservation value to the ESU	High
D4	Wenatchee	Nason/Tumwater	1702001103	12	Moderate-high HUC5 score; CHART concluded that there were very few low conservation value HUC5s since ESU as a whole has only 3 demographically independent populations and limited spawning/rearing PCEs; PCEs in this HUC5 support one population; CHART determined that spawning/rearing PCEs in this and other uppermost watersheds were of high conservation value to the ESU	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18)[8]	Comments/Other Considerations	Initial CHART Rating of Conservation Value
D4	Wenatchee	Icicle/Chumstick	1702001104	10	Moderate HUC5 score; CHART concluded that there were very few low conservation value HUC5s since ESU as a whole has only 3 demographically independent populations and limited spawning/rearing PCEs; PCEs support one TRT demographically independent population; this HUC5 has few spawning areas but contains a high value connectivity corridor for upstream HUC5s	Medium
D4	Wenatchee	Lower Wenatchee River	1702001105	11	Moderate HUC5 score; CHART concluded that there were very few low conservation value HUC5s since ESU as a whole has only 3 demographically independent populations and limited spawning/rearing PCEs; PCEs support one TRT demographically independent population; this HUC5 has few spawning areas but contains a high value connectivity corridor for upstream HUC5s	Medium
	Multiple	Columbia River corridor	NA	ns	Area not scored since CHART concluded that rearing and migration PCEs throughout this corridor are highly essential to ESU conservation	High

Figure D1. Initial CHART Ratings of Conservation Value for Habitat Areas in HUC5 Watersheds Occupied by the Upper Columbia River Spring-run Chinook Salmon ESU


DRAFT
Upper Columbia Spring Chinook
CHART Watershed Ratings
UPPER CHEWUCH RIVER
LOST RIVER
UPPER METHOW RIVER
LOWER CHEWUCH RIVER
MIDDLE METHOW RIVER
TWISP RIVER
LOWER METHOW RIVER
UPPER COLUMBIA/ SWAMP CREEK
WHITE RIVER
CHIAWA RIVER
ENTIAT RIVER
NASON/ TUMWATER
ICICLE/ CHUMSTICK
LOWER WENATCHEE RIVER
LAKE ENTIAT
Watersheds (HUC5) by CHART Rates
High
Medium
Low
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S
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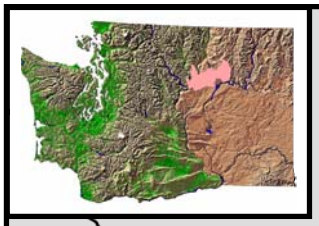
3
6 Miles

Maps D1 through D10. Upper Columbia River Spring-run Chinook Salmon ESU – Habitat Areas Under Consideration for Critical Habitat Designation (note: the Columbia River corridor is not shown but is under consideration as described in the text)



DRAFT
Upper Columbia Spring Chinook Distribution
Chief Joseph Sub-basin (17020005)

04

02

05

03

Nespelem

Brewster

Bridgeport

Chief Joseph Dam

Foster Creek

Belvedere

Koontzville

Elmer City

Coulee Dam

Wells

Azwell

Mansfield

Columbia River

Map D1

Legend

- Cities
- Dams
- Streams (1:100,000)
- Watersheds

Upper Columbia Spring Chinook

- Spawning/Rearing
- Rearing/Migration
- Migration/Presence

Land Ownership

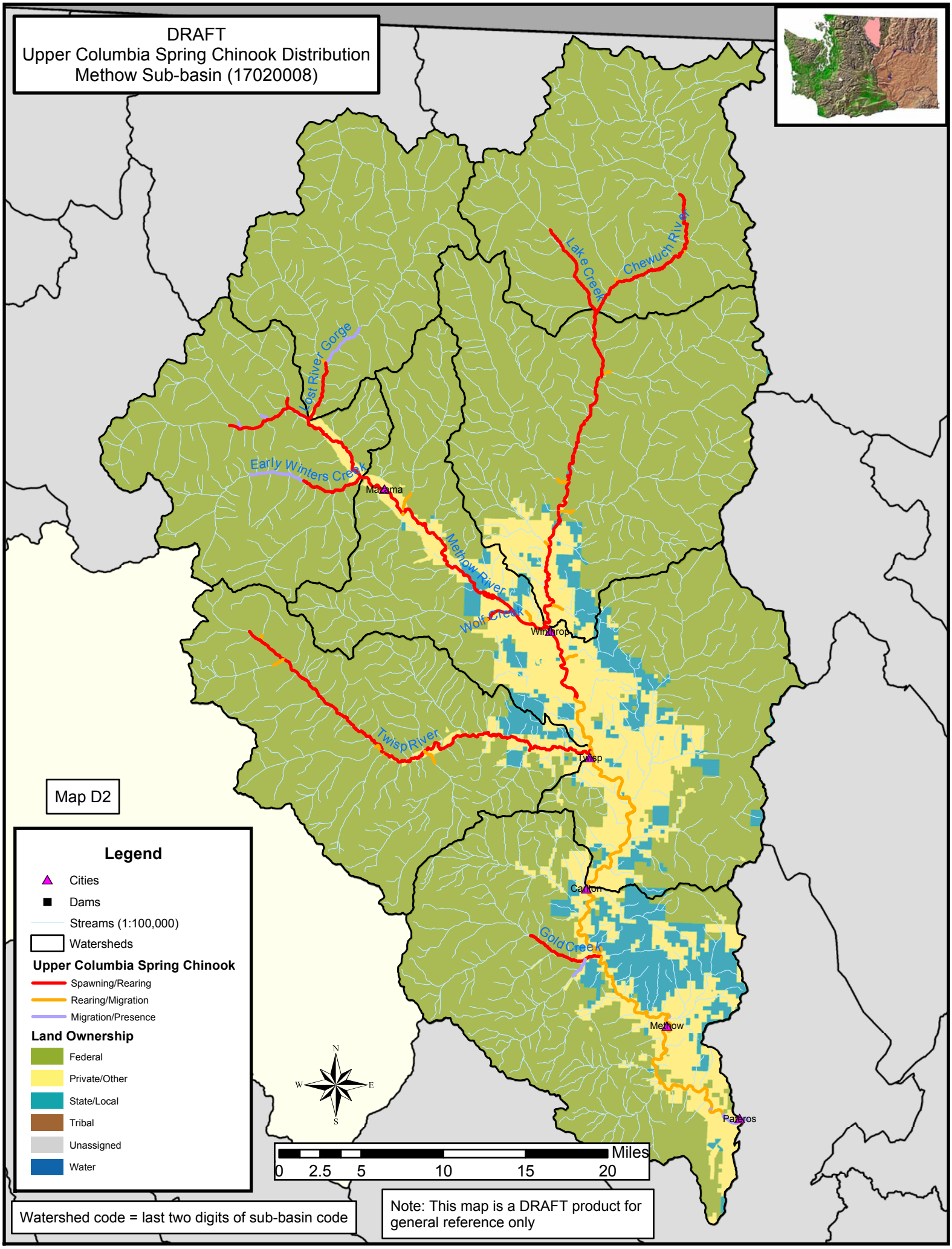
- Federal
- Private/Other
- State/Local
- Tribal
- Unassigned
- Water

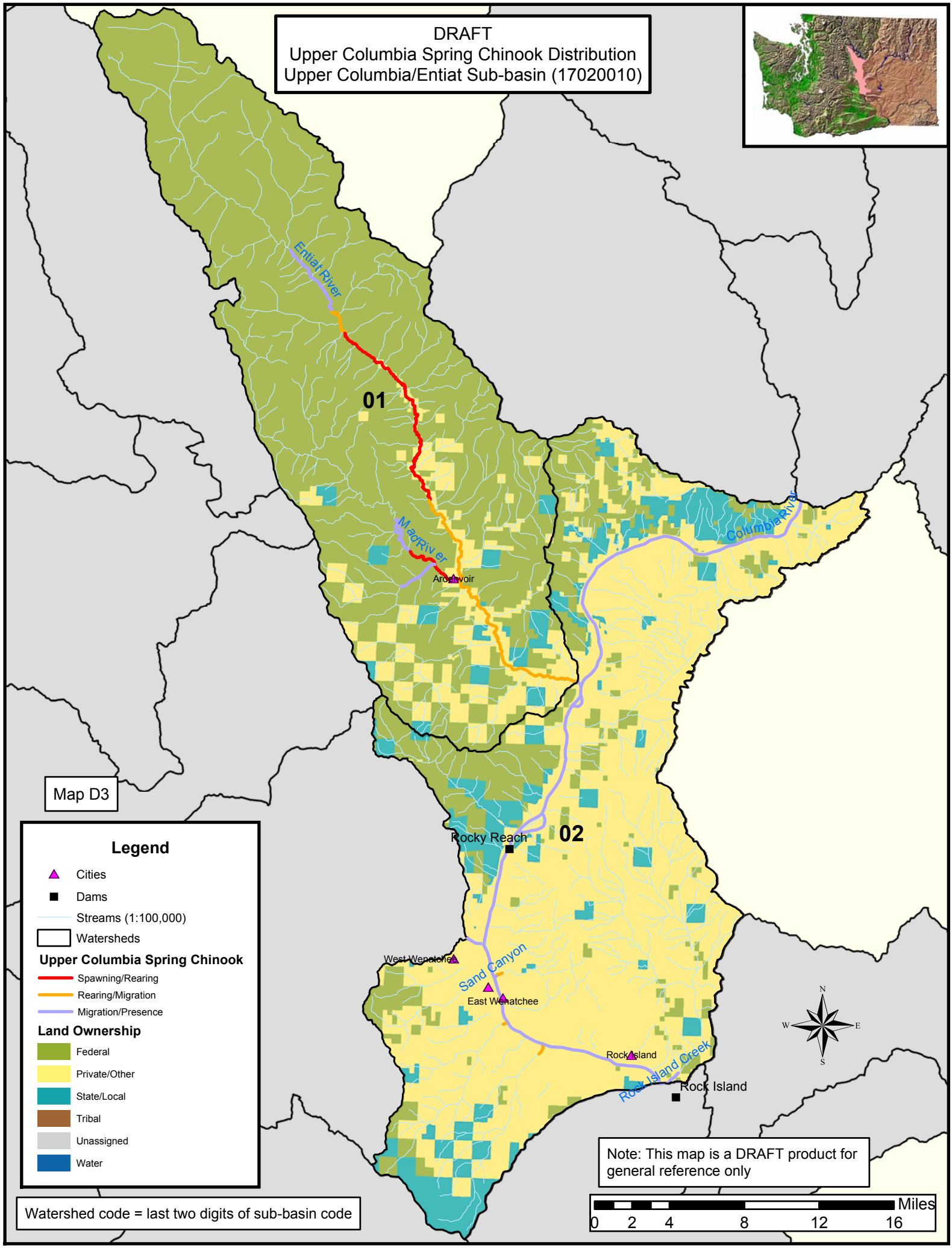
Note: This map is a DRAFT product for general reference only

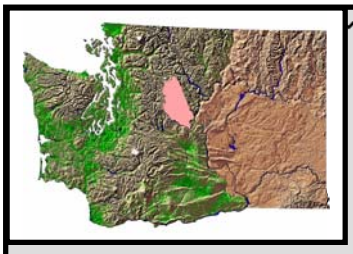
Watershed code = last two digits of sub-basin code

N
W
E
S

0 2 4 8 12 16 Miles


DRAFT
Upper Columbia Spring Chinook Distribution
Methow Sub-basin (17020008)
Lake Creek
Chewuch River
Lost River Gorge
Early Winters Creek
Mazama
Methow River
Wolf Creek
Winthrop
Twisp River
Twisp
Carlton
Gold Creek
Methow
Pateros
Map D2
Legend
Cities
Dams
Streams (1:100,000)
Watersheds
Upper Columbia Spring Chinook
Spawning/Rearing
Rearing/Migration
Migration/Presence
Land Ownership
Federal
Private/Other
State/Local
Tribal
Unassigned
Water
N
W
E
S
0 2.5 5 10 15 20
Miles
Watershed code = last two digits of sub-basin code
Note: This map is a DRAFT product for general reference only


DRAFT
Upper Columbia Spring Chinook Distribution
Upper Columbia/Entiat Sub-basin (17020010)
Entiat River
01
Mad River
Ardenvoir
Columbia River
Rocky Reach
02
West Wenatchee
Sand Canyon
East Wenatchee
Rock Island
Rock Island Creek
Rock Island
Map D3
Legend
Cities
Dams
Streams (1:100,000)
Watersheds
Upper Columbia Spring Chinook
Spawning/Rearing
Rearing/Migration
Migration/Presence
Land Ownership
Federal
Private/Other
State/Local
Tribal
Unassigned
Water
N
W
E
S
Note: This map is a DRAFT product for general reference only
Watershed code = last two digits of sub-basin code
Miles
0 2 4 8 12 16



DRAFT
Upper Columbia Spring Chinook Distribution
Wenatchee Sub-basin (17020011)

01

02

03

04

05

White River

Chiwawa River

Little Wenatchee River

Nason Creek

Chiwaukum Creek

Wenatchee River

Icicle Creek

Entiat River

Methow River

Leavenworth

Peshastin

Cashmere

Monitor

Winton

Plain

Map D4

Legend

- Cities
- Dams
- Streams (1:100,000)
- Watersheds

Upper Columbia Spring Chinook

- Spawning/Rearing
- Rearing/Migration
- Migration/Presence

Land Ownership

- Federal
- Private/Other
- State/Local
- Tribal
- Unassigned
- Water

N
W
E
S

0 2.5 5 10 15 20 Miles

Watershed code = last two digits of sub-basin code

Note: This map is a DRAFT product for general reference only